

# **Indoor Chemicals Linked to Respiratory and Allergic Effects in Children**

Health Update  
September 25, 2008



**Air Resources Board**

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**California Environmental Protection Agency**

# Background

## Indoor Air Links with Asthma, Allergies

- Dust Mites
- Cockroaches
- Animal Dander
- ETS
- Ozone
- $\text{NO}_2$ ,  $\text{NO}_x$

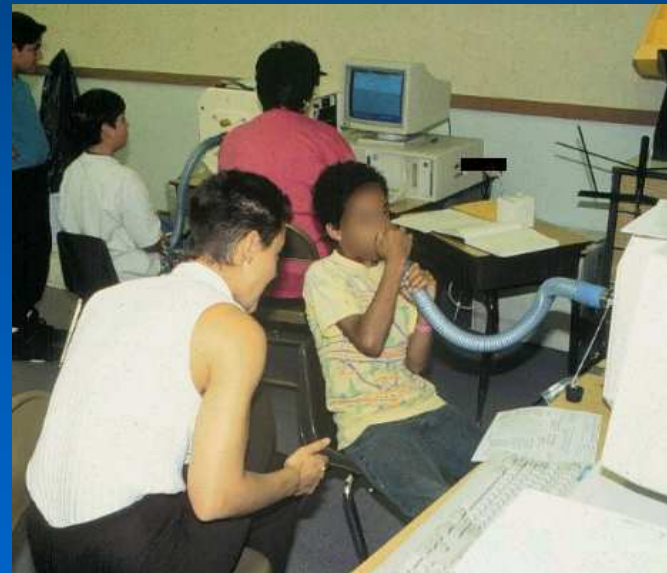
## Emerging Concerns

- VOCs
- Formaldehyde
- Phthalates



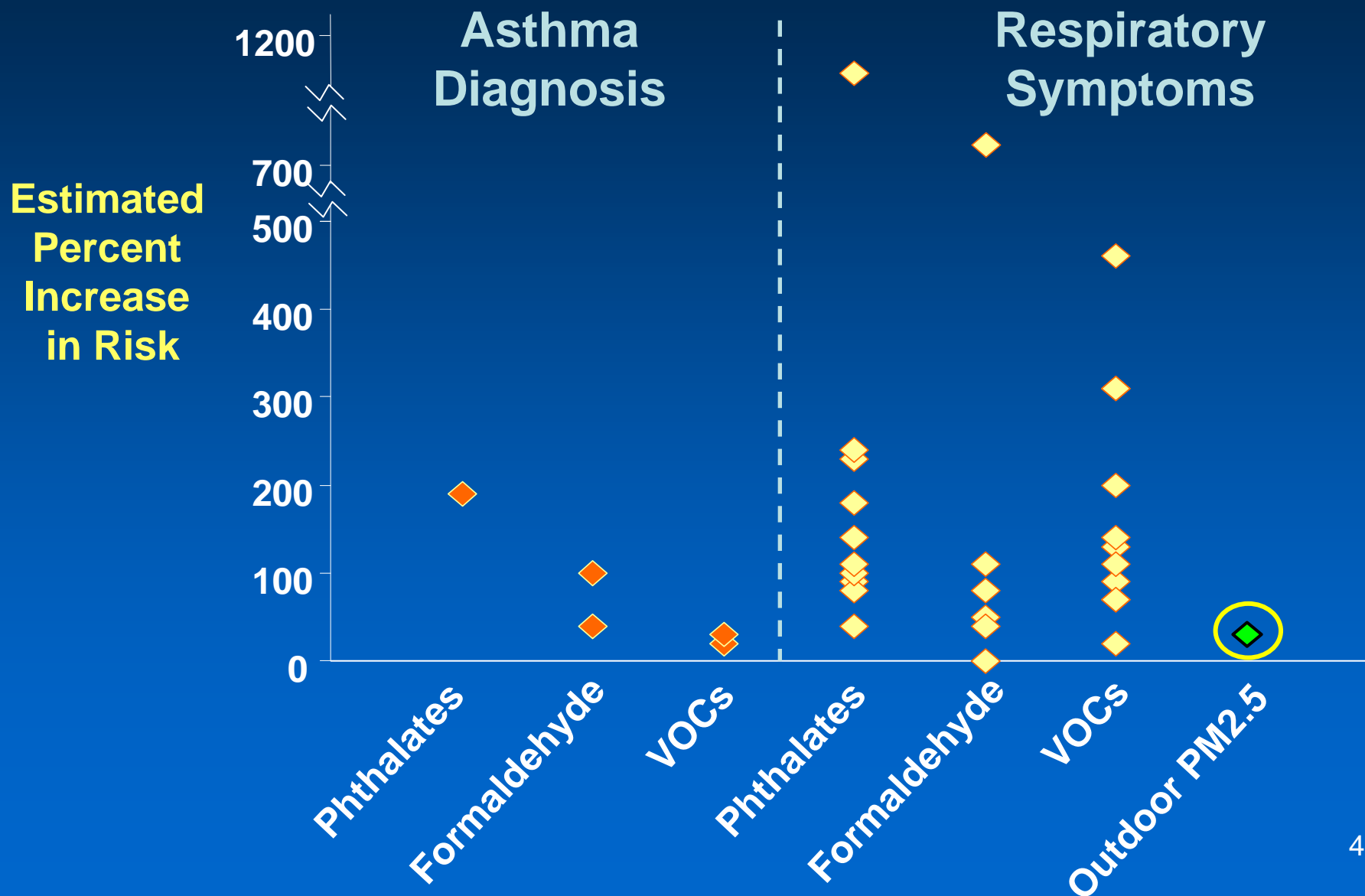
## Methods

- Literature Review of 21 Studies<sup>1</sup>
- Two exposure categories
  - Indoor chemical *concentrations*
  - Indoor chemical *sources*
- Children 0-15 years old
- Health outcomes
  - Asthma and respiratory effects
  - Allergic effects



<sup>1</sup> Mendell MJ. Indoor residential chemical emissions as risk factors for respiratory and allergic effects in children: a review. *Indoor Air*, 2007; 17(4): 259-77. Funded by U.S. EPA and U.S. DOE.

# Results: Increase in Asthma Diagnosis or Respiratory Symptoms



# Indoor Chemicals or Their Sources and Associated Health Outcomes

- **Phthalates / plastics**
  - Asthma, eczema, bronchial obstruction, wheeze, cough, phlegm, rhinitis
- **VOCs / use of paints, cleaning products, other sources**
  - Asthma, wheeze, lung infection, allergy, obstructive bronchitis
- **Formaldehyde / particleboard**
  - Asthma, wheeze, chronic bronchitis, allergies
  - Effects seen at concentrations as low as  $16 \mu\text{g}/\text{m}^3$

## Limitations

- Some studies did not adjust for known risk factors
- Some studies identified presence of sources rather than measuring concentrations

# Conclusions and Implications

- Suggests new indoor risk factors
- Supports composite wood ATCM and consumer products regulations
- Supports Green Chemistry Initiative
- Demonstrates need for asthma and allergy studies of phthalates, formaldehyde, and VOCs in the U.S.

